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Systemic government and the civil servant. A new pattern for systemic design

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Systemic Government and the Civil Servant
A New Pattern for Systemic Design

Abstract
This article examines the emerging application of systemic design methodology within government as practiced by the Alberta Public Service in Edmonton, Canada. A case study, from a practitioner's perspective, for systemic policy design is presented as an innovation facing approach useful for cultural change and decision-support. Lessons about applying systemic design within government and essential capabilities and qualities of practitioners are outlined. For some systemic designers, government might be the best place to effect systemic change especially those particularly concerned about advancing stewardship and innovation within the culture of government. This article is useful to public sector practitioners interested in applying systemic methodology to complex and long-term policy predicaments.

Keywords: systemic design methodology, systemic foresight, civil servant, public policy, cultural change, government

Introduction

Government decisions manifest within the landscape and can greatly affect change within their jurisdiction and beyond. A perfect example would be decisions about regional energy policy. A government's views about the production, transportation and consumption of energy within their geography notably impacts land development, resource extraction, economic investment, urban design, transportation, climate change, economic competitiveness and the social mix of a region. Energy policy decisions are foundational to complex predicaments, including energy insecurity, poverty, food and water security and social strife. Notable examples abound but this complexity manifests at the human scale towards whole systems and the spaces in-between.

Until relatively recently, government policy development, insofar as it was systemic, relied upon hard systems methodology which began with a knowable problem and converged on a solution. This linear and monistic approach brought depth but lacked context of the wider societal, technological, economic, ecological and political systems. In simpler times, and in the absence of complex systems methodologies, this approach was the best option for policy development. Consistent with this view, governments organized themselves around discrete policy silos, each bringing an expert depth to their thematic responsibility. This is opportune where increasing specialization leads to new knowledge, but challenged where context is needed to avoid unintended consequences. The article proposes that unintended consequences are deleterious to the credibility and trust that citizens place in government by consuming scarce energy and resources on solving misplaced problems. Complexity as it is now, calls upon government to navigate policy predicaments with a new framework – one that brings both depth and context for rigorous policy.

This article examines the emerging context of the civil servant – one entrusted with the public interest by duty and responsibility – who practices within the architecture of government, deploying systemic design methodologies towards the complex predicaments that societies face. Governments are responding to complexity in policy decisions – design consultants are retained; government staff are trained in designerly ways; and, experienced-designers are employed on in-house consulting teams. These models have the effect of increasing the profile of design practice within government. The model of the Department of Energy in Alberta, Canada is examined with a view towards articulating this emerging context of systemic design

practice. The case of a trans-ministry design team applying systemic design methodology around a shared strategic concern is presented.

The important question of this article – ***how might systemic designers within government deliver value to the public they serve?*** – is addressed through a discussion of this emerging practice, a case study and lessons learned. The article and case study explores additional questions:

- What is the cultural challenge of systemic design for government?
- What is the role of the designer in this challenge?
- What are the unique challenges and opportunities faced by systemic designers within the civil service?
- What considerations influence systemic design within government?
- Which professional capabilities and qualities must the designer possess?
- What are the implications for systemic design practice?

This article is essentially about how systemic designers who live within the architecture of the government can best deliver value to the public they serve. The basic flow of the article is as follows. First, the relationship between policy, the systemic and design is explored. This introduces the idea that government policy's place of intervention is quite structural, assumption-bound and typically connected to geography. This concept is material where the civil servant designer seeks to motivate change by challenging assumptions or at a different scale or place. The overlapping ideas of stewardship, first in the context of the public interest and then as a designerly mode of behaviour are related. Next, by describing the emerging pattern and how this new model relates to the old, the article describes the context from which other civil servants may apply systemic design to policy challenges. Similar business models are introduced as the starting point for the emerging pattern. Policy challenges are broadly interpreted to encompass any situation where government seeks innovation. Then, the case study is described from the perspective of an internal systemic design team framing a long-range and complex policy challenge. The case study focuses on the methodology rather than the content of the project. The case study provides the background useful for subsequent discussions about systemic design as an innovation facing methodology, cultural adaptation and decision-making framework. Finally, the key lessons for systemic design practice are presented as these relate to considerations for success and the capabilities and qualities needed for this practice.

Relating Policy, 'the Systemic' and Design

The recent international popularity of using design and systemic methodologies for transformations in complex-adaptive systems around business, politics and government has attracted a wide range of proponents. Businesses and business schools have rebranded themselves as design-oriented with *design-thinking* being central to a renewed interest in human-centric, integrative and creative problem solving (Dunne & Martin, 2006). Meanwhile designers of the third and fourth area (Buchanan, 1992; 9-10) have jostled about how to articulate a more systemic view, adding alternatives to design-thinking. In the third area, *user experience*, *service*, and *interaction design* have emerged as expected advocates for bringing context, content and the user to the forefront of society's relationship with technology (Cottong, 2009). In the fourth order, architects and to a lesser extent other spatial designers have introduced *strategic design* to effect "big picture" change to complex societal challenges like health care, education and climate change (Boyer, Cook & Steinberg, 2011) pitching integration, visualization and the craft of stewardship (2013). Other strategic designers advocate for a critical and constructive mindset in facing complex systems and cultures (Hill,

2012). Likewise, academic colleagues at the *University of Montana (UM; Missoula), Oslo School of Architecture and Design (AHO; Oslo)*, and the *Ontario College of Art and Design (OCAD; Toronto)* have related system-thinking and design-thinking as *systems-oriented design* (Nelson and Stolterman, 2012; Sevaldson, 2012; Jones, 2014), using the *Systemic Design Research Network (SDRN)* as a platform to advance 'the systemic' in all design domains. The work of the *SDRN* is notable for its rich academy and breadth of practitioners, including civil servants from Norway, Sweden, the United Kingdom, Denmark and Canada. Overall, these communities have the effect of increasing the profile of design practice everywhere, including within government.

From the perspective of public policy, the *Government of Alberta* is responding to complexity in policy decisions by retaining design consultants; training staff in designerly ways; and, employing experienced designers on internal consulting teams. Within the *Alberta Public Service* (APS), the non-political and administrative arm of government, at least three entities are involved with systemic policy design; the first among these is discussed in this article. Each entity operates at the government-wide scale, includes membership/staff from diverse disciplines and is concerned with systemic policy design:

- *Strategic Foresight Community of Practice (SF-COP).*
- *Systemic Design Community of Practice (SD-COP).*
- *Department of Energy, COLAB: Systemic Design and Foresight Team.*

In all cases, these communities coalesce around shared policy concerns that transcend traditional organisational structures and practices. They operate as in-house systemic policy design platforms, where practitioners, author included, can learn theory and apply practice to real world policy challenges. To a limited extent, these now play a role in stewarding systemic policy through government and towards the public.

A Shared Stewardship Agenda

By relating the concept of stewardship between civil service and systemic design we can draw lessons for this emerging practice. Conventional civil service, not unlike systemic design practice, centres on stewardship but the two disciplines advance the concept differently. This article proposes that the civil servant designer synthesises both. In the case of civil service, stewardship is an end state that aligns with the public interest (Government of Alberta, 2005). It is the 'place' where we take decisions 'to' with an idealized objective to balance competing interests and offer advice in the best interest of society (Figure 1). Stewardship in this view is an outcome and a destination. Typically, a 'decision' takes the form of a 'policy', but legislation and regulations can fit within this category. Policy might be viewed as a structural intervention to achieve broad or specific public interest outcomes. Policy is the case and conditions for energy, resources and information flows to be allocated based on particular assumptions. Government policy evolves with changing mindsets, structures, patterns and events in the environment. From this perspective, systemic design and foresight can bring a great deal of contextual awareness to government policy.
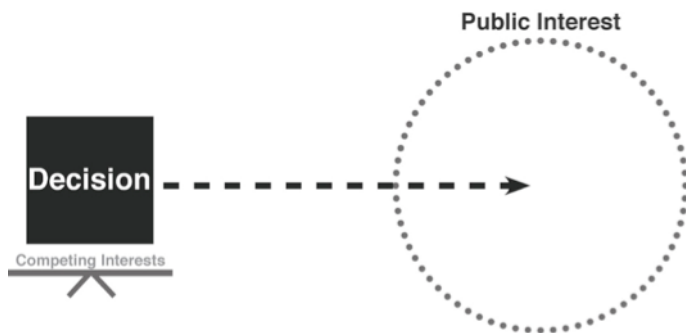
Figure 1: Stewardship of Public Interest

Design nuances the scale of decisions by extending into human- or citizen- centricity in decision-making (McMullen, 2011). While systemic design has added that stewardship is active and about bridging the value chain – the careful and dutiful execution of modes of behaviour from problem conception to value delivery and necessary feedbacks (Boyer, Cook, Steinberg, 2011; Figure 2). In this respect, systemic design brings an advanced and innovation focused agenda of stewardship to the governance space where 'delivered value' equates with credibility and social approval (MindLab, 2011; Figure 3).
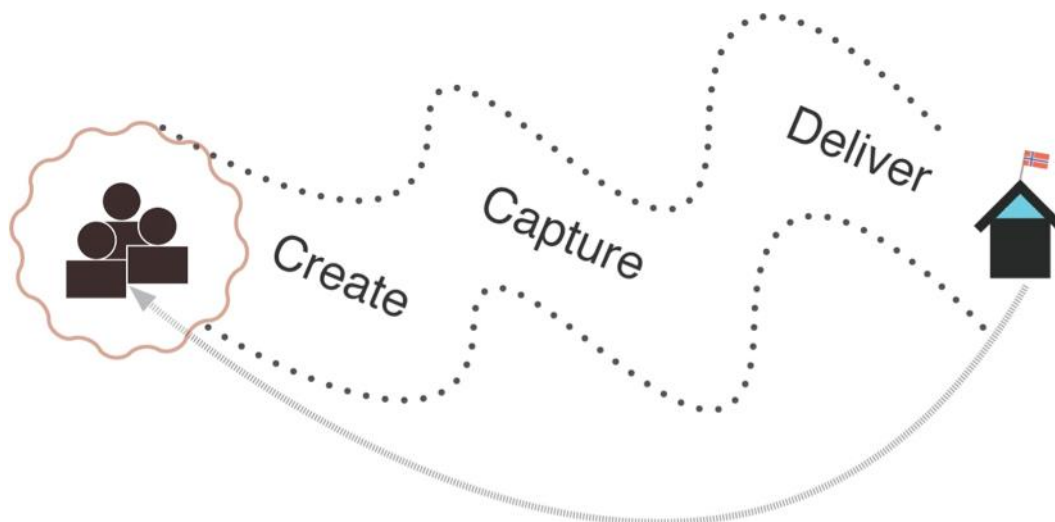

Figure 2: Craft of Stewardship (Design)

For civil service, human centricity and the stewardship of ideas to fruition appears novel. From this perspective, practicing *within* the architecture of government might be the best place for some systemic designers, especially those particularly concerned about advancing stewardship as a mode of behaviour and gaining a civil servant's eye for public interest outcomes. By placing complex problems between citizens and the public interest, the civil servant designer's basic innovation might bring greater legitimacy and credibility to government decisions. This legitimacy and credibility may be generated from the increased awareness about the needs and desires of citizens. Figure 3 shows a synthesized model.
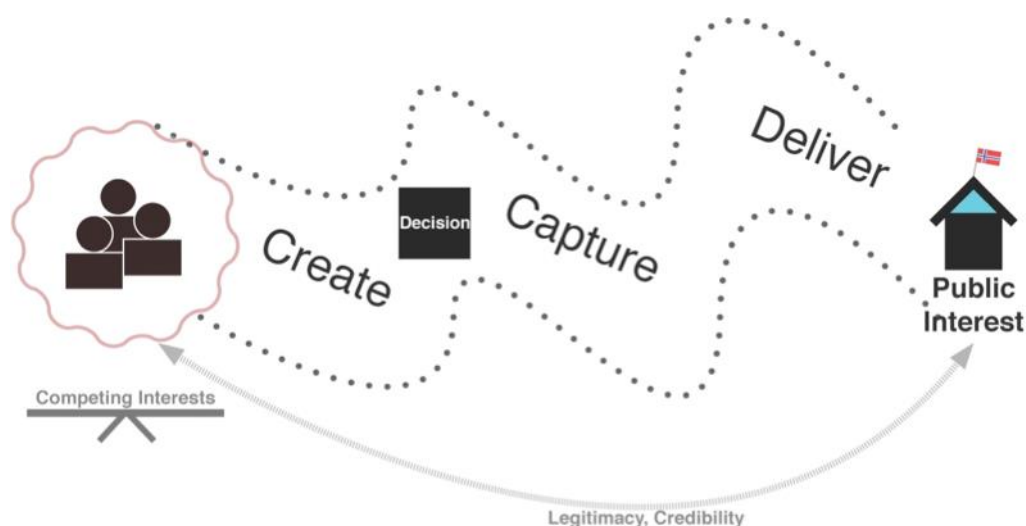
Figure 3: Emerging Craft of Stewardship

Modelling a New Pattern

In describing a new pattern – the emerging context of the systemic designer within government – this article negotiates the abstractions and nuances of systemic policy design to describe, using a particular case, lessons others may consider for similar circumstances.

In contemporary government, templates and process charts guide the daily functioning of a department's important policy, research and business activities. Templates are example patterns that can be replicated or applied to similar circumstances and with similar execution, perhaps with similar results. Templates are appreciated within government because, when applied consistently, they may provide predictable and repeatable results. Systemic design frustrates the application of nuanced templates in two important respects. First, in the context of government, the ideas of the systemic are quite novel, narrowly distributed, not yet credible and even within the systemic design community there exists few artefacts that resemble a template. Systems-oriented design, strategic design and design-thinking being the largest scale patterns with varying degrees of 'systemic' and 'design' attributes. The methods associated with these practices are more specific with influence diagrams, rich pictures, context maps, systemigrams, causal loop diagrams and infographics being common systemic visualization method templates. On the design side, if it can be delineated, there are innumerable design method templates with agencies and schools, like IDEO and Stanford d.school, being prolific producers. Of the templates that do exist, some are proprietary and most are designed outside of the context of government. This is problematic where inexperience is common and champions are asked to commit to an ambitious and ambiguous exercise of exploration with uncertain and unpredictable results. Within the prevailing culture of government, this may be viewed with scepticism. Second, unlike simple or complicated tasks, the complex is far more dynamic. Besides, the craft of stewardship is unfriendly to nuanced templates because the quality of execution influences the finished result so heavily. In the case of systemic policy design, predictability is not available at the onset of the project, if it was, systemic transformations would be more obvious. Paired with the dynamism present in complex predicaments, the value propositions of predictability and repeatability suggested by templates is missed. The irony is that wicked problems would not be 'wicked' if they were easily solvable. Yet, government would prefer a standardized application to the uncertain craft of systemic design. These observations aside, business models do exist and perhaps offer government an abstract template sufficient for risk-taking.

In September 2012, and prior to the case study, our team surveyed international business models demonstrating systemic and/or design-thinking within government. We found inspirations in the work of *Helsinki Design Lab*, *MindLab* and *DesignGov*. These are introduced below:

- *Helsinki Design Lab* (Helsinki). *Helsinki Design Lab*, an initiative of *Sitra*, is a hybrid model that attempts to "synthesise the best of design with the best of public policy and problem solving." (Boyer, Cook and Steinberg, 2011: 15) They refer to this practice as strategic design and distinguish themselves from the design-thinking movement by adding the craft of stewardship (Boyer, Cook and Steinberg, 2013). Helsinki Design Lab operated from ~2008 to June 2013.
- *MindLab* (Copenhagen). "A [Danish] cross-governmental innovation unit which involves citizens and businesses in developing new solutions for the public sector". *MindLab* helps three ministries and one municipality view their "efforts from the outside-in, to see them from a citizen perspective." (MindLab, 2013).
- *Australian Centre for Excellence in Public Sector Design (DesignGov)* (Canberra). *DesignGov* was an 18 month experimental pilot intent on "collaborating with agencies to apply strategic co-design processes and thinking on complex issues which lead to improved outcomes, efficiencies and effectiveness of public solutions" (DesignGov, 2013). *DesignGov* operated, as a pilot, from July 2012 to December 2013.

While our case study did not include the deployment of a full-scale business, the patterns and lessons of these examples inspired the new pattern that we would create.

In the Alberta Public Service (APS), staff have the ability to form a community of practice (COP) – a self-organising, organic and self-directed community of practitioners who convene regularly around a topic of shared interest. Within the APS there are many COPs concerned with innovation in policy, business planning, statistical analysis, strategy and design. Membership is typically voluntary and very little formal structure surrounds these groups. These COPs act as a temporary re-organisation of government where staff from various silos gather regardless of modes of knowing, behaviour or decision-making. After the case study, I will discuss these "observable silos".

Beginning in August 2012, *Alberta Energy* (DOE), in partnership with *Alberta Environment and Sustainable Resource Development* (ESRD) formed the *Strategic Foresight Community of Practice* (SF-COP). The community brought together practitioners and those interested in anticipating and framing a range of possible futures for various systemic concerns around natural resources, energy and environment issues. At its formation, the community had a membership of about 15 staff spanning six ministries which has since grown to ~70 members from across the government. From the outset, the need for systemic context and integration within the cluster of ministries was observed. Using a semi-structured co-design process we answered some initial questions:

- Where do we need innovation?
- What problems/issues/concerns do we all share?
- How might we model the future of work in government?

The co-design process identified that the SF-COP needed to initiate a context-gaining project to both pilot systemic design and strategic foresight methodologies and ideate about how government could address challenges of present-day natural resources development, specifically related to the lack of social acceptance in some areas. More about this framing

question will be provided with the case study. The SF-COP agreed to connect our best thinking with executive decision-makers.

Case Study: Project Discovery – The Future of Social Licence and Engagement to 2042
This case study examines the first phase of Project Discovery with a view towards describing the approach, methodology, and implications for systemic design practice. Given that the project is one input to future government policy, with implications for the public interest, this paper attempts to strike a balance between making the process legible and relevant to the academic goal of this journal and protecting the integrity of the government policy process. With this objective in mind, some details are reasonably excluded. Nevertheless, sufficient process and content information are provided, so that others may learn from our experience.

> At the outset, Project Discovery's desired outcomes were to:
> 1. inform the leadership of the APS about possible futures and design innovative policy options for the present;
> 2. grow the capacity for systemic foresight and design within the APS; and,
> 3. model the future of collaborative, integrative and systemic working.

The scale of the project is noteworthy, with a core team (8 members) implementing a program that crossed nine departments and impacted +100 participants. It should be noted that other, concurrent systemic design activities ran simultaneously with this case. These are also noteworthy and some of these are discussed in the proceedings of the RSD2 Symposium, hosted at the *Oslo School of Architecture and Design* from October 9-11, 2013.

Background
Project Discovery deployed systemic design methodology to a long-range foresight problem. The process was deliberately designed to use highly participatory and integrative methods. The project sought to anticipate the range of possible futures for social licence and engagement towards 2042. Social licence is a term associated with extractive development, including the land-development, infrastructure and on-going operation of facilities. Alberta is a major hydrocarbon-producing region, with globally significant energy, mineral and agricultural resources. These resources have the potential to generate economic and social value for the province and within a wide range of ideas about prosperity. An on-going challenge relates to social approval and acceptance, at many scales, including regionally, nationally and globally, and at many scopes, including specific projects, companies and resource sectors. Social licence is generally described as the state of trusted relationships among government regulators, developers and social actors/communities. As the project uncovered, a system of factors such as trust in government, environmental and social performance, local and regional benefits, employment, climate change, competing values, habitat conservation, competing economic sectors, emerging technologies, declining and insufficient infrastructure, energy insecurity, water scarcity, urbanization, centre-periphery conflict, aging and diversifying populations, aboriginal land claims and many others influence perceptions about extractive development. The complexity of this system is striking and decision-makers were keen to better understand this predicament from multiple frames, identify possible interventions and consider the business model of government with revised assumptions. The desire to avoid unintended consequences and build shared language was also discussed by project sponsors from the outset. With these considerations, the 2042 timeline was selected, as it was determined sufficiently distant and plausible for systemic change. Considering that the planning, construction and decommissioning of projects transpires over decades, if not centuries, the 30-year timeline was deemed appropriate. Where multiple government agencies, with stakeholders, sought to

improve trusted relationships across multiple scales and scopes, a long-term view was deliberate.

Beginning with a framing question, that was itself part of a design process, as will be explained below, Stage 1 and Stage 2 of the project progressed through six distinct frames. At least eight workshops/activities with staff from across the Natural Resources and Environment Pod, a multi-Ministry integration forum, were delivered to achieve the desired outcomes.

Figure 4 outlines the timeline for the delivery of the six frames. Stage 1 (Frames 1-4) concerned problem synthesis and Stage 2 (Frames 5-6) concerned integration. Each frame oscillated between divergent and convergent thinking:
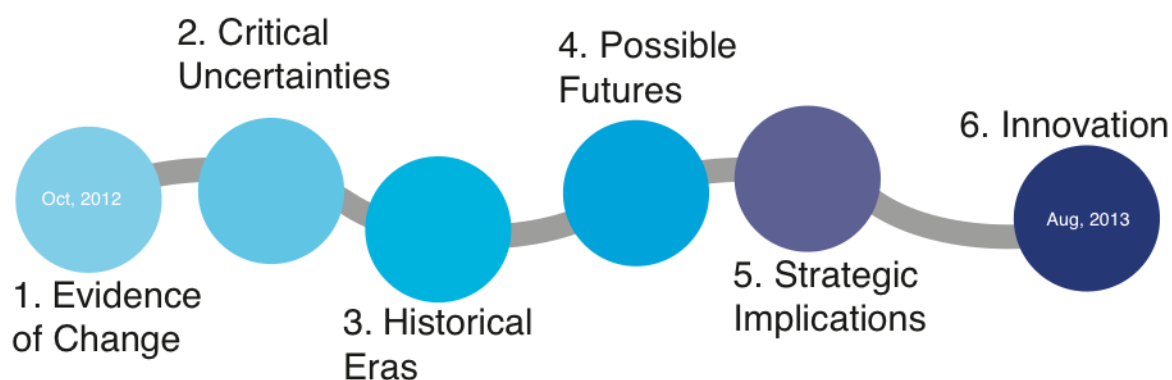

Figure 4: Delivery of Six Frames

Methodology
The following summary outlines the methodology of the project, with short descriptions of each step.

Formation and Problem Design
- *Core Team Selection (September, 2012)* – The membership of the Strategic Foresight Community of Practice was canvased for their interest in participating in Project Discovery. Membership was filtered to ensure sufficient diversity and variety in academic, professional, non-professional and departmental affiliations. In practice, the team coalesced around personal interests in strategic foresight and systemic design and professional interests in the topic and innovation in government. All of the eight core team members had some technical knowledge of an aspect of the problem space and basic systems-thinking knowledge.
- *Framing Question Design (September, 2012)* – The generation of an initial framing question was done by the core team, based upon the basic needs of decision-makers and the desired outcomes described in the overview above. Two design exercises were used. First, team members generated and collated a list of possible themes. These were then prioritized as being critical to not critical within a gradient. Next the team asked "why" each theme was critical and why it mattered to government. The framing question was developed from that discussion: ***How might the Natural Resources and Environment Pod employ social licence and engagement to achieve sustainable prosperity by 2042?*** The timeline of 2042 was selected because it was believed that plausible and systemic change could manifest within this period. The long-timeline is characteristic of a strategic foresight exercise. In retrospect, the term 'sustainable prosperity' was a challenging concept. In looking at the framing question, at least, three wicked problems for government are identified: 1) social licence; 2) engagement; and, 3) sustainable

prosperity. Sustainable prosperity is an abstract term that government uses to describe the ultimate, but ever evolving, future. It is a particularly value-laden term that challenged the project team at every frame. Throughout the project, participants challenged the meaning or multiple meanings of this term. These debates were a theme throughout the project and, eventually, in Frame 4 (Possible Futures) sustainable prosperity became a speculative tension/critical uncertainty for our scenarios. In describing sustainable prosperity with different logic we were able to generate very different answers to the framing question. Even though our framing question was critiqued heavily by participants, this was viewed favourably by the core team. After the project, the team recommended that a subsequent systemic design exercise be developed about sustainable prosperity. This has since been initiated.

Stage 1: Problem Synthesis

- *Frame 1: Evidence of Change (October, 2012)* – Evidence of external change in society, technology, ecology, economy, politics and values (STEEP-V) is collected broadly within government. A first step of the team was to find and organise this information into an information architecture that was consistent and useful to the framing question. This was an immensely difficult task. First, while this information is broadly collected and collated, it was rarely summarized in the nine participating departments. Secondly, the physical structure of the information varies considerable across departments and even within departments. So the team was provided with gigabytes of raw data tables and references, which did not follow common rules about structure or content. This required a novel strategy to re-filter information with common rules and to summarize it appropriately. For this frame, the team created a new database with fields for *Title, Short Summary, Long Summary, Category and References*. Each participating department reviewed another department's data and applied filters for relevance to the framing question and the common rules. This process took several (unplanned) weeks but the result was a coherent dataset. Perhaps more importantly, this activity created a new convention for future data sharing.
- The team then identified card-sorting, pattern finding and influence mapping as the best sensemaking methods (Photos 1-3). This information was then printed and colour coded on portable index cards. The cards were used in eight card-sorting exercises with participating ministries and one large session with the SF-COP, including representatives from each participating ministry. The card-sorting identified emerging patterns and existing structures, which could be relevant to the framing question. The influences and interconnections between emerging patterns and structures were then sketched out in each of the eight workshops. The influence-mapping technique intuits viable models of a system through observation of its visible effects. By collecting evidence of change, mapping uncovered possible relationships invisible to other analytical approaches. The influence mapping was well received by participants. It was helpful because it supported earlier analysis and investigations with synthesis. Also, by making this frame social and participatory, the frame built shared awareness and literacy of system dynamics.
- Frame 1 identified 23 signals, trends and drivers that would be impactful to the framing question and a network of relationships among these. As a team we summarized the 23 signals, trends and drivers and created an influence map. These products would be used in later parts of the project, including presentations and activities.

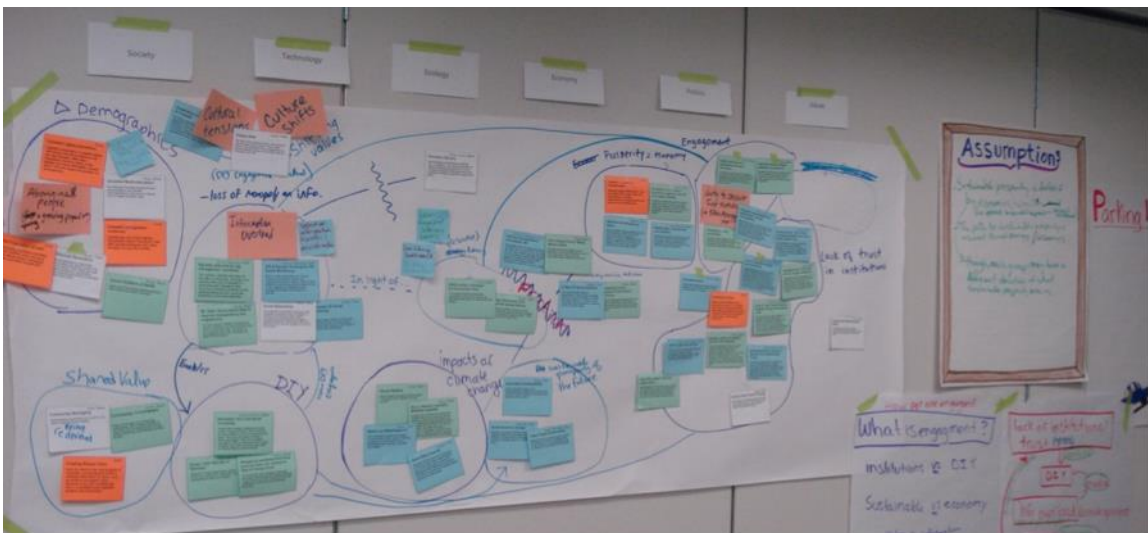Photo 1: Card-sorting, pattern finding and influence mapping workshop

Photo 2: Card-sorting, pattern finding and influence mapping workshop

Photo 3: Card-sorting, pattern finding and influence mapping workshop

- *Frame 2: Critical Uncertainties (November, 2012)* – Following Frame 1, and at subsequent workshops, participants used the influence mapping to identify critical uncertainties. These are highly impactful and uncertain systemic conditions that could define change in the future. Critical uncertainties were viewed as mindsets at tension. Three tensions were identified and these formed the starting point for Frame 4, possible futures. The tensions spanned three dimensions: ecological/economic; social/political; and technology/values. Iceberg- and systems- mapping exercises were used to uncover possible critical uncertainties. Possible critical uncertainties were then ranked and discussed (See Photos 4-6). The critical uncertainties bound the range of possible futures (i.e. possible alternative models of the system).
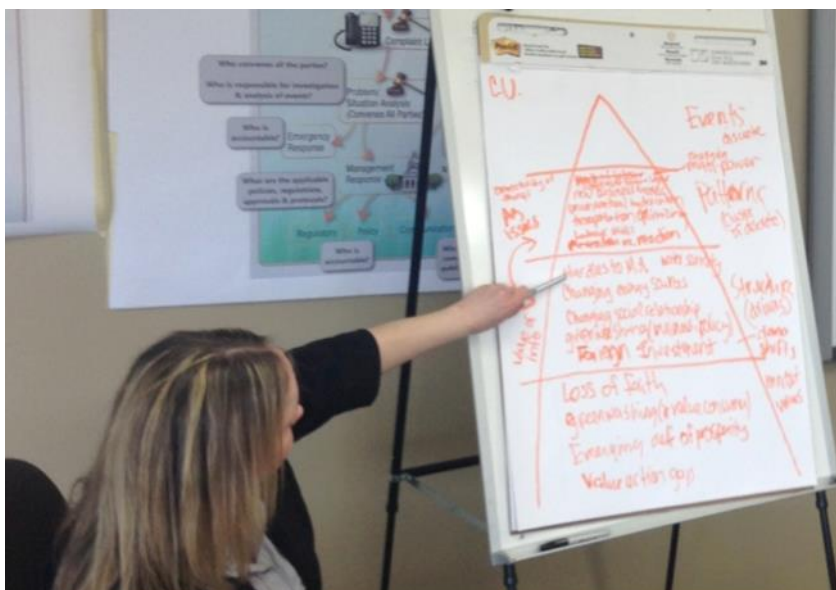

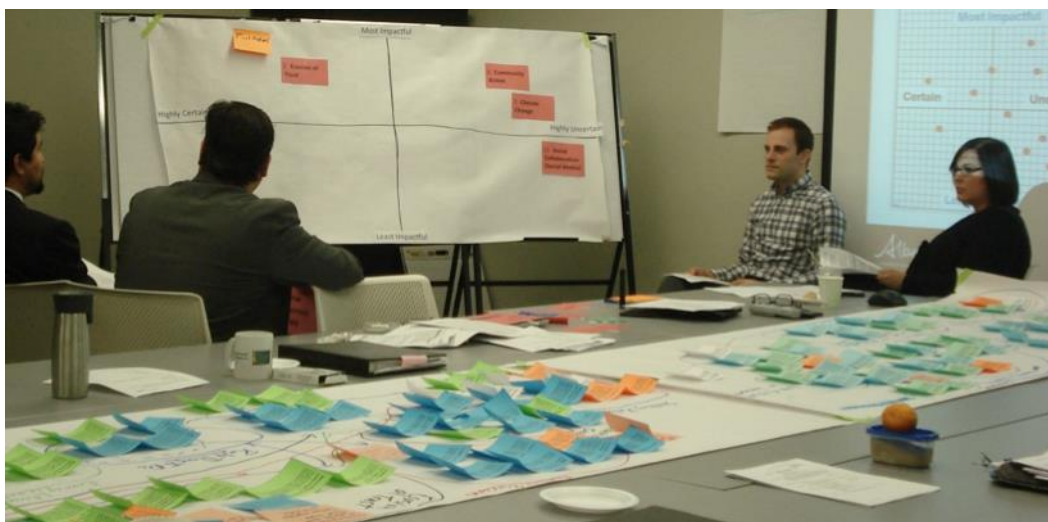Photo 4: Example Iceberg Mapping Activity

Photo 5: Critical Uncertainties and Risk Workshop

- Three critical uncertainties were selected as being particularly important to the framing question. These were summarized as questions with a contrasting answers:
  - *Sustainable Prosperity* (Economic/Ecological Dimension) What state of economic development will enable individuals, families and communities to enjoy a high standard of living and quality of life, while respecting and preserving the natural environment? The tension here was 'traditional

economies' verses 'new economy'. Would the traditional economic model, based on market forces, welfare distribution mechanism and technological innovations persist? Or would a new economic model emerge, addressing economic, social and environmental factors systemically?

o **Utility of Information** (Technology/Values Dimension) How available, reliable and relevant will information be to social actors? The tension here was 'information rich' verse 'information poor'. How accessible will contextual information be in the future? Information rich environments are seen as those where pertinent and contextually appropriate information is available to all decision-makers as needed, and without barriers. Information poor environments are where it is very difficult, if not impossible, to differentiate between the information needed to make decisions and misleading or even irrelevant information.

o **Institutional Structures** (Social/Political Dimension) What kind of organizations will be utilized to pursue broader social purposes? The tension here was 'building new institutions' verses 'deference to existing institutions'. Would individuals continue to defer to existing institutions and structures? Or would new institutions and structures would be built to bypass the existing?
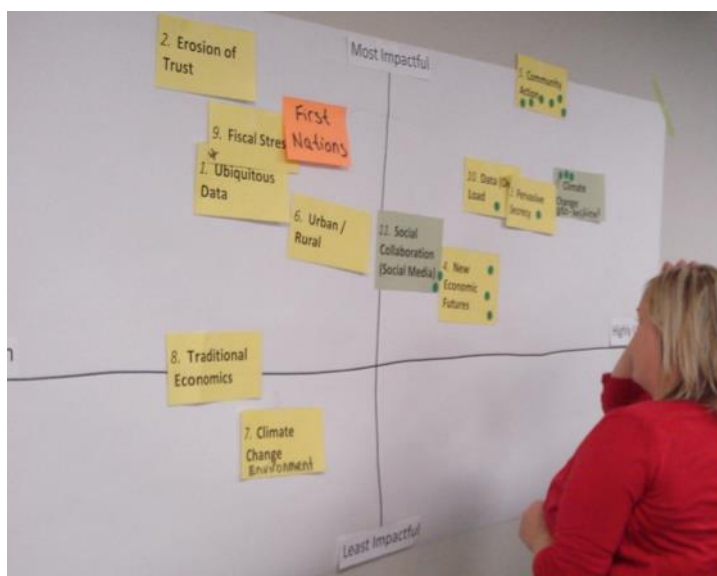

Photo 6: Critical Uncertainties and Risk Workshop

- **Frame 3: Historical Era Analysis (November-December, 2012)** – The historical era analysis frame set out to answer five questions spanning the time frame of 1860-2013:
    o What is preoccupying society at large?
    o What disruptive technologies have emerged?
    o What factors are affecting the economy?
    o What are some important environmental issues?
    o What are the key political issues?

The objective of this frame was to view past events, patterns, and structures as a dynamic series of discrete eras, characterised by their mindsets. The underlying assumption of the era analysis is that societal values drive change within human systems. This exercise helped to frame the present as well as possible future directions. Also, the historical era analysis visualized how complex change could manifest over time. It demonstrated the plausibility of radical change within the 30-year timeframe of the foresight framing question. As a visual, the historical era analysis might be thought

of as a series of iceberg diagrams overlaid and built from past patterns. *This visual is too large to feasibly include in this article.* The historical era analysis activity was approached with an expertise/intuitive method, and the team did not engage widely. We viewed the creation of this frame as a tool to increase the credibility and plausibility of the systemic foresight work. Overall, this frame was very popular with participants, mainly due to its interesting analysis and information depiction, but it was not particularly helpful in answering the framing question.

- *Frame 4: Possible Futures (December, 2012-January, 2013)* – Scenarios create rich descriptions and imagery about possible futures. Scenarios were designed to help draw out strategic implications (Frame 5) and identify possible innovations (Frame 6) for government. Scenarios are just models of possible futures given revised assumptions about the systemic conditions. Four scenario design methods were used.
    - A *simple 2x2 scenario matrix* was developed using the three dimensions identified in Frame 3 (Figure 5). These critical uncertainties created the basic logic for eight scenarios. These possible futures are textual stories and 3D visualizations of where Alberta might be heading. They model the highly impactful and uncertain conditions referred to as tensions or critical uncertainties in Frame 2. The objective was to co-create multiple, possible futures for government to consider. The development of the logic and basic narrative was led by the core team at two workshops in December and January. The triangular diagrams found in each scenario describe the changing relationship between government, developers and communities. In addition to the thick descriptions found in the scenario text, these abstract diagrams helped articulate differences between the scenarios.
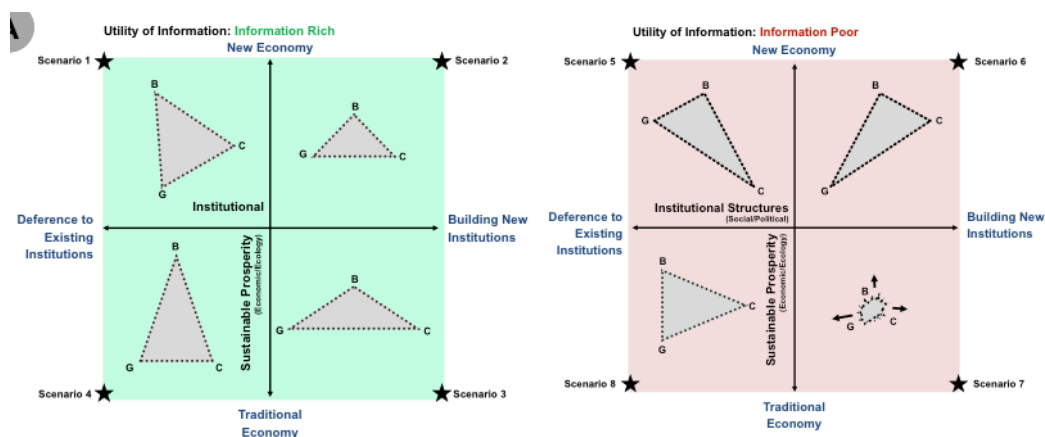

Figure 5: Example Simple 2x2 scenario matrix

    - A *3D-Scenario technique* translated the three dimensions from Frame 3 and the basic logic developed with the simple 2x2 scenario exercise into a three dimensional cube (Figure 6). This was an interesting visual but was difficult to comprehend. Perhaps the most interesting insight was that workshop participants viewed one particular assumption-bound quadrant as being the "box" where government policy is developed.
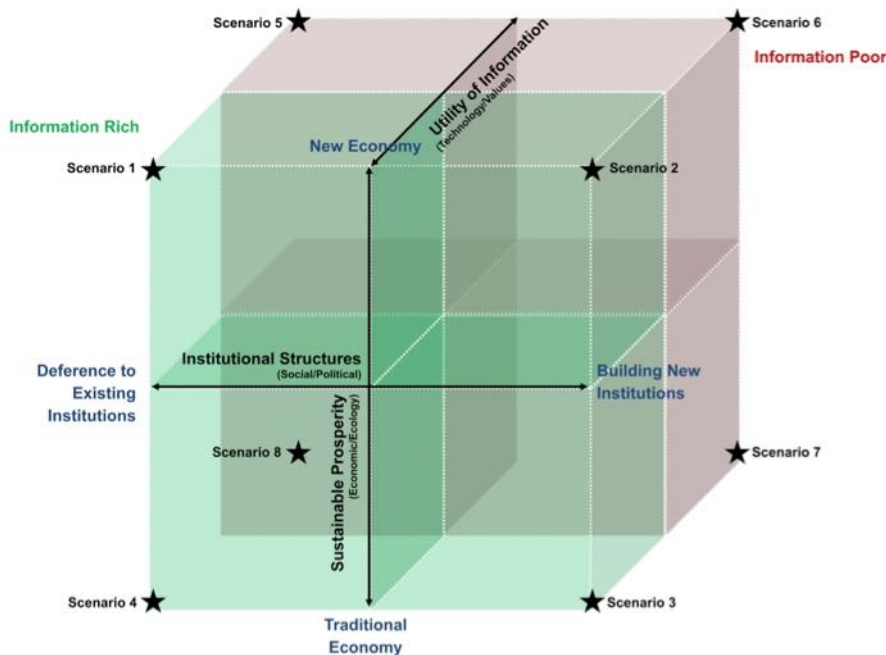
Figure 6: Example 3D Scenario Technique

- o ***Cone of plausibility*** translated the simple 2x2 and 3D-scenario techniques into another visual format (Figure 7). This activity helped the core team to communicate the logic of each scenario and how change might manifest over the 30-year timeline.
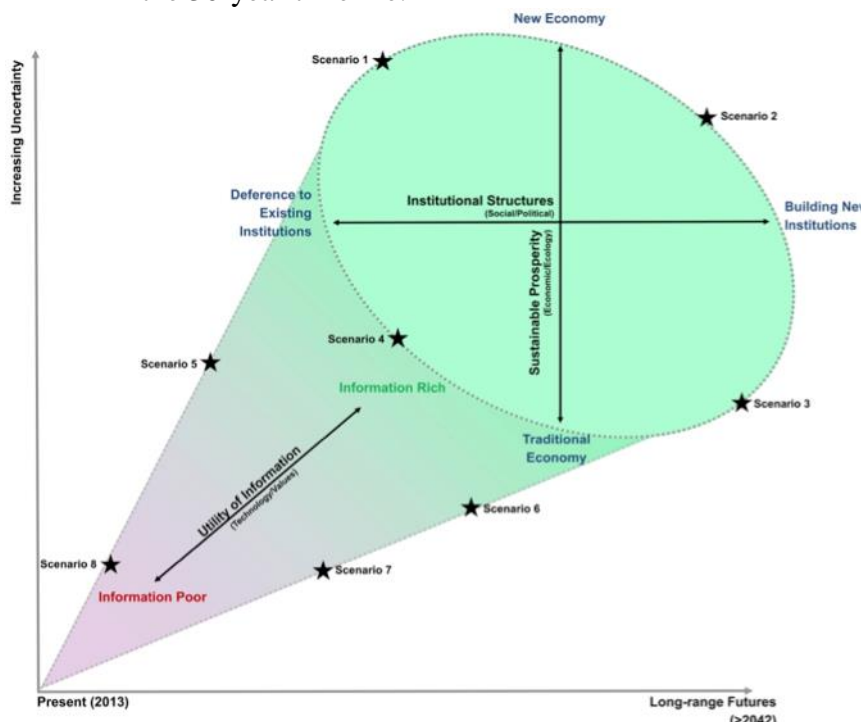

Figure 7: Example Cone of Plausibility

- o ***Pathways and dimensional change*** visualised the eight scenarios with corresponding possible pathways. Pathways were developed based on the various systemic changes possible. This approach helped to articulate the plausibility of the each of the eight scenarios over the 30-year horizon. This was

intended for our executive leaders, so that they could see how short and medium term choices could manifest as long-term and systemic changes.

Stage 2: Integration

- *Frame 5: Strategic Implications (February-March, 2013)* – The systemic framing from Stage 1 created the lens from which the government could view current policy and strategy decisions. Frame 5 is the organizational perspective. In Frame 5, we worked within our organisation, using integrative workshops to reflect, challenge assumptions and find insights. The aim was to internalize the content developed in Stage 1. The workshops were delivered as a three-part colloquium with an executive summary presentation, poster session with small group discussions and a structured discussion around the implication finding questions listed below. Our objective was to use participation as a means to build shared understanding, systemic literacy and to find implications. We helped staff from across the organization to use and understand the frames. The workshops were repeated within the participating ministries. In this process we made the systemic foresight exercise legible to participants. Workshop participants answered implication finding questions in a series of guided workshops:
  - What surprised you about the frames?
  - How might these frames be used in your work?
  - What was the most important lesson for government?
  - What tools could be useful or applicable to your work?
  - How could these frames be used to support future policy development?
  - What assumptions do we hold about the future? Are these valid?

- This was a particularly difficult frame. The integrative work was exhausting to the team in terms of organising quality sessions and facilitating large audiences. These audiences brought with them reductionist culture and lacked awareness of systems-thinking. At the first session we gained feedback about the need to educate our audience about systems-thinking and foresight – we adapted subsequent sessions with varying balances of content, process and methodology. We collected, collated and summarized the responses from all the sessions. This information was then placed in a discussion paper format, which is the culturally appropriate template for Deputy Ministers. The discussion paper format was difficult because it required translating the results of a design exercise in to government jargon. The team overcame this challenge by providing design artefacts (i.e. visualizations and photos) and discussion paper to the Deputy Ministers. And, the team requested and was granted permission to present the discussion paper with design artefacts to the Deputy Ministers as a structured workshop.

- *Frame 6: Innovation (April-August, 2013)* – Frame 6 concerns the examination of current and possible strategic intentions given the view points of the previous five frames. While we described this as an innovation frame, the contribution involved value creation and capture rather than value delivery. That is, Frame 6, generated, evaluated and recommended systemically transformational policy directions but the execution of these strategies is delegated to the organisation. We branded the workshop for this frame as "*(un)Finished Futures*". *(un)Finished Futures* served as an informal meeting for the exchange of views and to critique and test innovative ideas. The workshop sought to excite action in both the topic as well as the practice and tools of systemic design, addressing five questions:
  - How might emerging patterns be harnessed to deliver new value to Albertans?
  - How might the critical systemic uncertainties surface strategic risk for policy?
  - What is government's business model in each of these scenarios?
  - Who is winning and losing in each scenario?
  - What are the policy issues in each scenario?

- The output of this frame was a shared artefact about the current strategic position, preferred future positioning and strategic activities useful to achieve the future vision. This included recommendations about government's role in building new institutions, improving the information environment with citizens and stakeholders, improvements to the regulatory system, new best practices of engagement, motivating and reporting about environmental performance with extractive industries, the need for structural diversification of the economy, trends and drivers that will impact the future of Alberta and the robustness of existing policies and strategies. This information was reported as one input in conjunction with existing policy approaches. Since the completion of the project, some of these recommendations have been enacted.

Overall, the case piloted the emerging pattern with favourable results. The content of the work was well received by executive leadership and staff, with executive leadership asking for two subsequent projects. And, feedback from surveys showed that participants viewed the work as high quality, visual, integrative and meaningful to the work of government. The following paragraphs provide further critique about lessons as they relate to the emerging practice.

Reconciling the Cultural Tension
The ultimate challenge of this case relates to the cultural tension between positivist/reductionist and constructivist/systemic cultures and the civil servant designer's role in reconciling these cultures. While all designers must deal with this tension to varying degrees, the civil servant designer's context is different. Unlike other systemic designers, the civil servant designer is embedded within an extremely large bureaucracy that is motivated to safeguard confidence and stability over the socio-political system. Complexity, uncertainty, volatility and ambiguity found about wicked problems casts suspiciously over this model. As cultures have the potential to consume the best intentions, the civil servant systemic designer should be aware and responsive to culture as it relates to achieving design outcomes. The civil servant systemic designer lives and breathes the culture of government; therefore, this experience signals possible futures for this emerging context. Each culture crafts different artefacts, patterns and structures. In the case of conventional government, the patterns of behaviour are hierarchical and highly formalized. This manifests within the structures of government with the architecture bringing such patterns as cubicles, executive floors, business centres and template buildings, and the decision-making framework requiring briefing notes, discussion papers and other rigid information reporting. There is certainly a time and occasion for these patterns and structures, notably during occasions where stability, predictability and repeatability is preferred. Perhaps the delivery of value fits this occasion best – i.e. the delivery of programs. But where instability and uncertainty surface, the systemic presents an alternative and innovation focused model. Undoubtedly, finding the right problems and designing with complexity fit the systemic occasion. Therefore, the way that the systemic designer reconciles this tension is critical to the survival of the practice. With systemic design bringing urgently needed "rich picture" context to decisions (Sevaldson, 2008), reconciliation enables a requisite depth of specialist knowledge to be deployed against defined problems. At the same time, the civil servant systemic designer must avoid both the pathology of excessive depth, too much reductionism and the pathology of contextual overabundance, too much systemic.

The cultural challenge that the civil servant systemic designer specifically faces relates to the complex and unique cultural phenomenon of government. As mentioned, reductionist culture creates the structures and patterns found in government institutions. For example, while government staff are organised by *modes of knowing*, or disciplinary themes, these well observed silos do not fully capture the degree of segregation. As observed by the case, three distinct, culturally-created and interconnected silos persist within our public institutions, each

of which uniquely tasks the systemic designer. By naming and describing these silos, strategies may be applied by the systemic designer to mitigate the disadvantages of each. While silos prove problematic from a systemic and innovation standpoint, large-scale alternative models for systemic government do not yet exist. *MindLab* and our systemic design lab being humble 'small by design' exceptions, whose impact is still quite uncertain. While there are many ways to describe these silos, for the purposes of this article, the underlying mindsets are presented as typologies.

The list is not exhaustive – at least, three observable silos in Canadian public institutions are presented in ***Table 1*** with the amelioration strategies applied in the case study.

Table 1: Designing with Multiple Modes

Observable Silos	Amelioration Strategies Applied*
Modes of knowing – disciplinary assemblages, typically professionals (i.e. economists, engineers, planners, architects, doctors, etc.), centred around shared discourse, language and practice about knowing and interpreting the world.	*These strategies were universally applied in the case study; however, in retrospect, strategies may be loosely assigned with particular silos: • Visualization • Anticipation • Network/Integration • Reframe
Modes of behaviour – problem solving assemblages centred on ways of responding to systemic change (i.e., thinkers, planners, doers).	• Network/Integration • Leadership • Visualization • Cultivation • Reframe
Modes of decision-making – hierarchies centred around decision-making about shared institutional or public concerns. Including, titles, classifications, ranks and other forms of legitimacy (i.e. Ministers, Deputies, Assistant Deputies, Executives, Managers, Officers, etc.)	• Cultivation • Visualization • Story/Narrative • Contextualize • Leadership

These silos were harnessed to address the cultural tension, during the case study in four useful ways.

1. ***Materiality.*** Modes of knowing bring a narrow and deep vantage point of the world and if decisions are not considered from a trans-disciplinary and systemic lens, this can introduce unintended consequences. But modes of knowing, for this case, were exceedingly useful in helping the systemic designer view the artefact and materiality of interventions. So, while modes of knowing bring a genuine cultural challenge, where the systemic designer aids permeability and cohesion this may be overcome. In the case study, the core team applied visualization tools and built an anticipatory and trans-disciplinary framework of the future with these modes of knowing (Frames 1-4).
2. ***Scale.*** Distinct modes of knowing bring a narrow and deep perspective of the world, but if a collective shared understanding is built, the scale and extent of a system may be uncovered. In the case study, the core team worked with this expertise to build a shared model about the future of social licence and engagement. Perhaps the most interesting outcome of this was an increased organisational appreciation for the wideness of and influences on the problem.

3. ***Innovation.*** Modes of behaviour can be short sighted in viewing value. Problem *thinkers* may fetishize the problem in the same way that *planners* obsess about process and *doers* about the practical 'realities on the ground'. Each brings a distinct view about value. All views are needed for successful innovations. The systemic designer, through the craft of stewardship, has the opportunity to bridge these ways of problem solving. In the case study, the core team spent significant time networking and integrating with these people to build trust and respect. The opportunity here is to provide innovation leadership, visualizing with these people about the possibilities in bridging great thinking with great planning and execution.

4. ***Centricity.*** Modes of decision-making can be accused of being 'out of touch' and bound by hierarchy. In the case, leaders at all levels of the organisation showed genuine interest in both the process and content of the project. In discussing the project with our leadership, a major value of the case was helping them see people, artefact and public value through the messiness of the problem space (Figure 8). The frames helped bring centricity to decision-making. By engaging with leadership and involving them in the design process, the project was already successful before we presented the final dossier to our leadership.
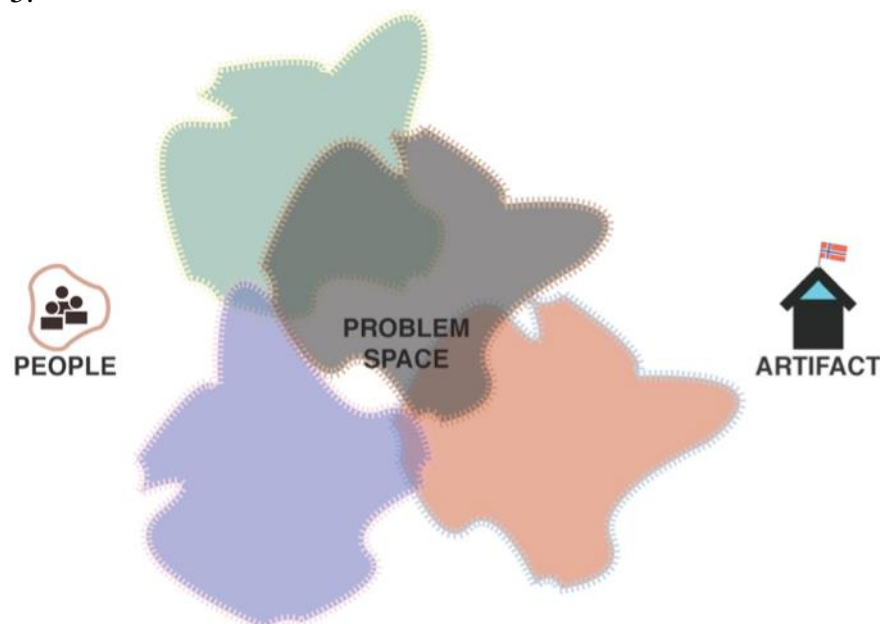
5.

Figure 8: Viewing Policy as a Problem Space

The challenge for the civil servant systemic designer might be described by a question – ***how might designers make the culture of government more permeable given the many silos?*** In the case study, the answer was a commitment to engage within the messy culture of government and promote a trusted exchange of ideas and information. For the systemic designer, identifying where these modes become pathological, and they are not always pathological, is essential. The civil servant systemic designer is uniquely positioned as an insider to apply systems-thinking and design methods to ameliorate these pathologies. Another answer to this question concerns how information is created. In government, the decision-framework is the culturally agreed upon information needed to make a decision. This includes the shared language and literacy about the problem placed within a structured format. Numerous formats exist, and may include any combination of frames relevant to the organization. In our case, these included the long-term, stakeholder, environmental change, systemic conditions, uncertainties and risks frames. The idea of a decision-framework might come across as government jargon, but as a civil servant systemic designer, we must construct information in a context that is hierarchical and

expert-centric. The decision-framework is simply a way of consistently packaging the constructed information in formats that, while respecting the design discipline, still appeal to the basic culture of decision-making. By working with the culture in this way, the design work may be viewed with greater credibility.

Summary: Lessons for Systemic Design Practice
Systemic design within government is a difficult proposition but holds the potential for enormous impact about the complex predicaments that societies face. The value proposition for government is an increased awareness of user needs, reduced unintended consequences, and more holistic decisions. The case study and discussion to this point outline broad lessons for systemic design practice within government, both from the perspective of applying the methodology within government and the designer's capabilities and qualities needed to effectively relate systemic design to government. The lessons are not intended to be exhaustive or applied mechanistically. The following sections summarize the lessons for systemic design practice, as identified by this case and application.

Considerations for Success within Government
We might consider a government systemic design program as a system itself. A successful program requires the right inputs, activities and outputs, applicable to the government context.

Below, general lessons are outlined based on these three themes, although significant overlap exists.
1. **Inputs**. Inputs include the material, energy and information required for a systemic design exercise, including on-going performance feedback.
    a. *Physical workspace:* A key challenge throughout the project was the lack of suitable working space. Government meeting rooms are not typically organized for highly collaborative teams. For example, rooms lack white space for sensemaking, typically have large boardroom style tables and access is temporary so project work cannot be stored outside meeting times. Also, it is very difficult, if not impossible, to reserve a permanent room. And, security restrictions limit access, so collaborators from other departments needed to gain access every day. For future projects, having a permanent and easily accessible workspace with adequate white space would save time and reduce wasted time. More importantly, if design artefacts are accessible throughout the project, important cognitive work will not be lost.
    b. *Dedicated staff:* the case study included a core team of seven part-time and one full-time core team members. Most team members were junior staff keenly representing their ministry. The time commitment for part-time members was an average of six hours per week of project time. Over the course of the case, three part-time members were replaced with substitutions due to job changes. This was a minor challenge as the new team members had to be indoctrinated into the culture of the team and learn about the content of the project. Overall, the size, commitment and dedication of team members was appropriate.
    c. *Information system:* Another challenge related to the information inputs needed for the project. Each department provided information including research, reports, stakeholder information, statistics, and trend information. The raw volume of information was enormous and the team was ill prepared to collate and summarize it. Also, the structure of the information varied considerably among departments. For the purposes of the project, the team created a shared database. This database was later used for all the sensemaking work (i.e. card

sorting, influence mapping, iceberg diagram, etc). If departments had shared rules/conventions and an active process for managing this information the project would have saved time and effort. In the future, a common and updated dataset could be used for multiple projects and multiple frames. This would reduce duplication significantly, especially where this information should be routinely available (i.e. stakeholders, users, landmark reports, etc.).

d. *Craft capacity:* Another key challenge of the project was a lack of systemic design and foresight capacity. While the team had dedicated and engaged participation, only two members had the skills and abilities needed (see next section on Capabilities and Qualities). The core team overcame this challenge by emphasizing knowledge sharing and mentoring. This was a deliberate and important decision that would later benefit subsequent projects. Nevertheless, this resulted in a disproportionate responsibility being placed on the experienced team members.

e. *Performance feedback:* Since Project Discovery was delivered as a pilot project, the team set out to document and report on its performance. The primary tool for this was performance evaluation surveys. Following every interaction, participants would be emailed a survey that included qualitative and quantitative evaluations. The survey was anonymous and results were aggregated. Following each frame, the core team would collectively review and discuss the results. These discussions were always interesting and motivated the team to adapt the engagement strategy as the project progressed.

2. **Activities**. Activities include the framing, re-framing and interaction required for a systemic design exercise, including the consumption or transformation of inputs.

a. *Stewardship:* The case and article describes stewardship in terms of modes of behaviour – i.e. think, plan, act – but stewardship may also be considered in terms of modes of decision-making. The civil servant systemic designer holds a privileged position among deputy ministers, middle managers, junior staff and the public. Throughout the case study, the team oscillated among these partners. In this role, the designer can help steward projects from top to bottom as well. It was interesting facilitating all these conversations, as each group was concerned about very different things. In particular, how each group perceived 'risk'. Executives were keen to take calculated and responsible risks in designing interventions, but they lacked the creative aptitude to generate ideas. Middle managers were the most resistant to change and perceived most ideas, outside the status-quo as unfeasible or unviable. Junior staff were the least risk averse and most creative, but assumed that executives would not appreciate their advice. Overall, the richest conversations occurred when both executives and junior staff collaborated together. In this respect, it is the role of the designer to facilitate rich conversations within the hierarchy and to reframe risk in relation to opportunity.

b. *Communities:* systemic design within the APS is an emergent and self-organizing system. Initially, nobody directed that systemic design and strategic foresight be embedded within government. It was the hard work, patience and dedication of staff at all levels who, with the growing popularity of systems- and design- thinking, began to self-organize under the umbrella of communities of practice. Collectively, these individuals span every department of the government. This network approach has been very successful, as the network is a source of practitioners, inspiration, and new projects. Also, from a resource

and investment perspective, organic growth is efficient in terms of physical resources and energy/effort. From the outset, it would have been difficult to convince deputy ministers to invest scarce public resources to build physical studios and hire full time systemic designers. Self-organization and emergence enabled a positive feedback where the results of projects draw more energy and resources and this in turn increases the capacity of government to conduct systemic undertakings.

3. **Outputs**. Outputs include the production of useful knowledge and creation, capture and delivery of new value.

   a. ***Products*:** The core team produced nine large posters, an electronic dossier, optimized for iPad, a discussion paper, an executive summary presentation and a longer detailed presentation. These products were targeted for a variety of audiences, purposes and occasions. The executive summary presentation was designed for senior leaders within the government. It primarily provided recommendations and frameworks (i.e. trends, scenarios, critical uncertainties) useful for decision-making. The longer presentation added depth in terms of how the team arrived at its conclusions and background about systems-thinking and strategic foresight. The electronic dossier provided comprehensive information and visuals about the project and background about theory and process. The discussion paper was circulated among all participating departments and deputy ministers. This format was preferred among the dominant culture. The posters were useful for the large audience colloquium, the (un)Finished Futures sessions and as static displays. The various audiences appreciated these products, as noted by on-going feedback, and they remain in use as references. From a design perspective, while aesthetically and culturally appropriate, these products are just a starting point for future systemic design projects. Future work could appeal to multiple senses – for example, illustrations for scenarios, design fiction or recorded audio for stories, video production to integrate ideas, blogs to document systemic design undertakings, e-books to report on findings, and using games with executive leaders to develop strategy. In these ways, systemic design can learn a great deal from publishing and marketing.

   b. ***Enactment*:** A critical challenge relates to the enactment of the findings of the project. All civil servants, including designers, can only advise the elected government on the range of options available and recommend a course of action. The elected government makes a decision, possibly with changes, and then the public service must enact systemic change. Typically this is structural (i.e. regulatory, policy or legislative) but occasionally new events and patterns (i.e. improved programs, services, experiences, etc.) are enacted. Unlike other design contexts, the civil servant systemic designer cannot independently enact systemic change. The exception to this rule is where the designer intervenes within the culture of the public service/ministry itself (i.e. communities of practice, networks, processes, work environment, etc.). The challenge here relates to stewardship. It is comparatively easy to help government gain a systemic view, as evidenced by this project, but considerably difficult to enact the recommendations of such work. Since the people who develop policy and the people who implement it are segregated, this project attempted to bring the two groups together. This was difficult because some degree of animosity existed between these groups, they communicate in different language and they have different experiences. In this way, the systemic designer's role is to

reconcile and facilitate shared, if not common, understanding. Time and effort spent reconciling this friction is well spent, as shared understanding is a critical success factor. Also, from a practical perspective, systemic design recommendations will receive greater executive support if assistant deputy ministers (ADMs) from both the policy and implementation areas agree on the recommendations. These two ADMs should be the systemic designer's champions and clients. It is essential that a strong and trusted relationship be built so that results are enacted.

c. ***Legibility:*** Another major and on-going challenge of this project relates to the production of this paper. The goal of this article is to describe, critique and reflect on this emerging practice. This has proved practically difficult with some details being excluded. Within government, a dynamic, critical and collegial culture exists, where thoughtful debate about innovation is encouraged. But, where this discourse interfaces with the public sphere (the external environment) it is viewed as exceedingly risky. It is not culturally acceptable to describe in detail or otherwise make legible the messy complexities of our work – although this perception is changing, positivist culture prevails and government is expected to have all the answers. Nevertheless, it's important that like all civil servants, the systemic designer assure integrity, independence and professionalism in the processes of government. This is a difficult line with the content, process and methodology being difficult to separate. The best approach for the civil servant systemic designer is to communicate with her/his superiors and take calculated risks where negative consequences are low and opportunities are high. This is an example of a calculated risk, where the opportunity is high for the APS to be viewed as a world leader in the systemic design field.

Capabilities and Qualities of a Civil Servant Systemic Designer
The civil servant systemic designer specializes in the craft of building cohesive models of complex systems and enabling beneficial systemic change. Unlike other civil servants and non-governmental systemic designers, ***what capabilities and qualities must a systemic designer within the civil service possess?*** At the surface, there are many similarities that are worth observing, but when considered on the whole, these capabilities and qualities create the emergent civil servant systemic designer.

Table 2 was generated with the Project Discovery team following the project. In reflecting on each frame and stage of the project, the following capabilities and qualities were identified (in no particular order) with key themes identified. The following definitions were used:

- ***Capabilities***: the abilities required to achieve successful outcomes; and,
- ***Qualities***: the values needed to thrive and be successful in the work context.

Table 2: Portrait of the Civil Servant Systemic Designer

Capabilities	Qualities
Visualization • Visualize complex information using complicated technology (i.e. software, physical models, imagery, printing, publishing, etc.) and simple methods (i.e. sketching, drawing, etc.) **Network & Integrate** • Mediate and seamlessly network among the hierarchies of the organization and outside government • Translate and interpret among disparate modes of knowing problem solving and decision-making (internal) and with the public (external) **Leadership** • Facilitate multi-stakeholder collaborative design activities • Identify and manage cultural differences and conflicts **Reframe** • Support the government view itself with an external perspective using unconventional methods • Awareness of diversity and range of possible reframing available • Articulate risks in relation to opportunities • Reconnect stewardship with decision-making **Story/Narration** • Articulate and interpret the narrative of systemic design activities with mixed/diverse audiences • Fluency in articulating the platitudes and nuances of complex policy – reframing for context as well as depth **Cultivation** • Identify and empower people/users closest to complex problems • Identify and track prospective information sources/inputs to on-going and future systemic design work • Cultivate and service the needs of executive leaders/champions • Cultivate trusted relationships across the whole of government at all levels • Train and coach others to think systemically and designerly **Contextualize** • Appreciation and understanding of public policy (regulations, legislation, strategies, etc.) • Appreciation for the social, economic, political and ecological context that government operates in, including the local history, culture and mindsets.	• Patience • Integrity • Honesty • Accountability • Respect • Trustworthy • Humbleness • Risk-taking • Anticipation • Creativity • Constructive • Diplomatic • Thoughtful • Critical-thinking • Systems-thinking • Strategic • Entrepreneurial

These capabilities and qualities depict (Table 2) the unique and emerging context of systemic design within government. The portrait above describes an individual with deep contextual knowledge about government and the local context, yet a sufficiently wide and diverse view to help government reframe and re-engage. The aptitude and astuteness about when to lead, not-lead, cultivate, facilitate and propagate systemic design suggests an agility and adaptability not always found in other models. The qualities imply huge personal investment in government, the people and relationships needed to be successful. Unlike other design practices, the civil servant systemic designer depends on others to enact change, the scale and scope of government being too large. The designer in this context relies on patient leverage to motivate change and

strategic nimbleness to move projects along. Last, the idea of cultural interpreter appears novel. In other models, the designer is quite removed from the client culture. In fact, this is viewed as advantageous for the consulting designer model, with reframing possible by shifting the design work outside the organization. In this case, the designer is embedded within the culture and places herself/himself in the role of interpreter and translator among the disparate modes of behaviour, problem-solving and hierarchies. In one moment the civil servant systemic designer is engaging the public, in the next she/he is re-framing policy with deputy ministers. Undoubtedly, this is a unique and privileged role – where the designer can confidently and seamlessly oscillate between the powerless and powerful.

Conclusions

Civil servant systemic designers live on the edge – they are embedded within the hierarchy of government but as facilitators they oscillate among all levels; they must help government gain a systemic view then also enact systemic change; and they must appreciate positivist/reductionist culture for the value it delivers, yet they must apply constructivist/systemic approaches to find and capture new value. They are fluent in all these languages and provide trusted advice about the public interest. By relaying among and between all these edges, the designer is navigating the complex cultural challenge of government – one characterized by apparently competing, but in reality complementary modes of knowing, behaviour and decision-making. The systemic designer must possess agile capabilities that include aptitudes for visualization, networking, integration, leadership, re-framing, narration, cultivation and contextualization. By being embedded within government, she/he understands what government is capable of, its hopes, dreams and fears. Systemic design, as an emerging pattern within government, is an interesting and opportune space for some practitioners. The position of government as steward of the public interest provides practitioners with the opportunity for systemic change. Meanwhile, practitioners introduce appreciated and sought after ideas about innovation, citizen-centricity, materiality and scale not common in government. Additionally, systemic design methodology leads government towards a more holistic and constructivist outlook concerning complex problems. Few places will provide the systemic designer with the time and space to tackle society's complex predicaments.

Disclaimer

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